CHAPTER V

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SOCIAL SURVEY

5.1 Introduction :

In the 56 years of independence it would be relevant to look at the transformation that has come about in the villages and improvement in the living standard of rural masses. Many Indian villages are still lagging behind some other countries in the field of basic amenities and environmental health.

Much of the ill health in the underdeveloped countries is largely due to lack of safe drinking water and hygienic conditions . Water pollution is by far the most serious in its implementations for the health of nation. WHO is of the view that, one in every three people in the world, lacking clean water, is an Indian. The implications of water pollution for the health and well being of people are serious. According to one estimate, two- third of all illnesses in India are related to waterborne diseases, such as typhoid, infective hepatitis, cholera, diarrhea and dysentery. Estimate also shows that water pollution causes around two million deaths in India every year (Sapru and Bharadwaj, 1990).

Different kinds of diseases are transmitted through contaminated water and poor sanitation. These diseases are caused by infective agents such as bacteria, protozoa, viruses or worms. An estimated 8.7 % of the deaths in the old age group; and 19.1% between 5 to 15 year age groups are due to waterborne diseases alone (Padey and Mishra, 1998).

Lack of water results in a poor standard of personal hygiene. An adequate supply of pure drinking water and sanitary disposal of human excreta are not only essential for the prevention of some of the diseases but also for a decent standard of living. There is probably no single factor that has greater effects on the health, well being and development of community than the provision of ample and convenient supply of wholesome and good quality water.

The physical conditions of the water supply are unsatisfactory in most of the villages. According to recent report of the Government of India, only 10 % of our rural population is at present served with piped water supply system and hand pump fitted tube wells. Probably another 10 percent may also have reasonably safe water supply from protected wells. Rests of the villages are exposed to water pollution.

Maharashtra, in the recent years, is facing a serous problem of unsafe drinking water. During summer, the only major activity of the people in majority of the villages is to collect drinking water at any cost. People have to get water from far away sources, average about 2 to 5-km distances from residential place. In some areas there is no regular water supply and the residents have to store water for various domestic purposes. Due to scarcity of water, people move towards unsafe water. This and other unhygienic practices affect their health. Constant increase in clinical cases of waterborne diseases in rural area is an alarming signal.

Rural sector in India is the backbone of the country's economy accounting for 75% of the land area and 74.29% of the total population(Census 1991). Maharashtra, having about 40,412 inhabited villages, accounts for 61% of the total population of the state. Kolhapur district has over 1203 villages.

During the present social survey stratified random sampling technique was used after a pilot survey in one of the villages. Sampling size of 57 individuals from the four study villages was finalised. The interview schedule was administered by the researcher herself in the study area as a separate part of the study after the laboratory analysis was completed.

5.2 Social Profile of The Study Villages

5.2.1 Morewadi

Ratnappa Kumbhar (R.K). Nagar is a residential area coming under Morewadi Grampanchayat. It has different water sources such as Kolhapur Municipal Corporation (KMC) water supply and ground water sources such as hand pumps, bore wells and open

wells etc. In R.K. Nagar 15 respondents were interviewed out of the total 57. Out of these 57% ware male and 43% were female. They were selected from different age groups such as 15-30 yr (14%), 31-45 yr (58%), 46-60 yr (14%) and above 61 years (14%) having educational qualifications such as literate (29%), matriculate (14%), graduate (43%) and post graduate (14%).

For drinking purpose some respondents (29%) used only corporation water, 57% from KMC and bore wells and remaining (14.2%) used KMC, bore well and hand pump water. It indicates that KMC was the major source of drinking water.

For other domestic purposes such as washing, bathing they depended mainly on KMC and bore wells (58%). Remaining (42%) relied on KMC, bore wells and hand pumps.. Most of the respondents told that KMC was the source of water through out the year. Around 43% respondents used water only from one source and 57% used more than two sources. All of them were aware that water from KMC was treated before distribution.

Most of the respondents also depend on ground water source for drinking, washing, and bathing (43%), for bathing and washing (43%) and for washing only (14%), depending on the availability and quality of the water. The drinking water requirement of the people living in R. K. Nagar varies from 25-50 lit/day and for domestic utility it was 800-1500 litres/day.

Water used for drinking and other domestic activities was stored by different ways. About 64% respondents used metal containers and Plastic overhead tanks, 18% used barrels and 18% of them constructed cement tanks for storage of water. A total of 71% respondents apply some traditional treatment to drinking water such as filtration (20%) and remaining used methods like candle filters. Water had peculiar taste due to dissolved constituents in it. Over 57% respondents told that water had sweet taste, for 29% it was having bitter and sour taste and for the remaining 14% referred to other tastes such as chlorinated, dusty, oily taste etc. .

Water though required for different purposes its quality could not be ensured. Sometimes it showed adverse effects on living and non-living things. In the village 43% respondents reported two major adverse health effects such as stomach-ache (33%), stomach-ache and dysentery (67%). Greater than half of the respondents did not observe any health problem. Among the affected persons 67% were small children, 33% belonged to higher age groups. The adverse health effects were observed maximum in rainy and summer season (43%), only in rainy season (43%) and only in summer (14%). Indicating that rainy season is the worst season fore diseases related to drinking water.

When water was used for washing purpose according to most (71%) it showed proper lather formation but some (29%) found it not suitable. About 86% of the respondents complained the adverse effects on hair i.e. 66% noticed only hair loss, 17% only greying of hairs and 17% both hair loss and greying of hairs. When water was used for bathing, 57% respondents observed some skin problems such as stickiness, drying of skin etc. but the remaining 43% did not have any effect.

Water in these areas was stored in metal utensils, and it showed effects like development of white spots (80%) and scale formation along with white spots (20%) as per the observations of the respondents.

Water contamination problem is also depends on location and depth of ground water sources. In Morewadi 57% hand pumps and bore well are located in the premises of house, near nalhas and gutters. 29% only near nalhas and gutters and 22% were in the agriculture farm areas. According to 43% respondents available water sources were perennial, 29% each told it was available for 8 months, and 10 months respectively.

When enquired about the change in the water status in the last ten years, only 29% respondents observed change in available water quality (good) and increase in quantity. However, 71% have found no change in it. They told that reduced rainfall, increase in drilling holes (bores), increase in population, uncontrolled over overuse and exploitation

of ground water resource are some of the reasons responsible for water quality and quantity problem.

Almost 71% respondents ware aware about the fact that why and how the water gets polluted. No permanent constructed gutters, improper drainage systems, leakage and corrosion of water distribution pipelines, governmental negligence ware some of the reasons for water pollution according to the respondents.

Over 71% respondents believed that there was increase or improvement in the water quality and quantity in the village, for which efforts were made at individual level (20%) and at KMClevel (80%). Remaining 29% respondents did not know whether changes had taken place or not. Social forestry plantations, proper use of water, construction of percolation tanks etc, are some of the measures suggested by the locals for further improvement in the water situation.

5.2.2 Kasaba Bawada:

In Kasaba Bawda 15 respondents were interviewed, among them 40% male and 60% female represents were selected for interview. Out of them 42% belonged to age group 46-60 yr. 33% to 31-45 yr and 25% belonged to 15-30 age group. In case of literacy, 42% were literate, 25% educated up to H.S.C., 17% had graduation. The percentage of ill-literate and postgraduates was same, that is 8%.

The villagers depended on different water sources such as KMC water supply, hand pumps, bore wells, and open wells for various domestic and agricultural purposes. Over 75% respondents used water supplied by KMC for drinking and only 25% respondents used both KMC and ground water sources such as hand pumps, bore wells, and open wells.

According to 75% respondents KMC water supply and hand pumps were the main sources of water and for 25% it was KMC water supply and open wells. For agriculture open wells were the major source. For domestic purposes 73%, respondents

used water from KMC water supply and hand pumps and 17% were dependent on both KMC water supply and open wells.

All the respondents depended on two types of water sources. Kasaba Bawada area has KMC water supply. 67% respondents mentioned that water from this source was treated but 33% did not know whether it was treated or not. Most of the respondents depend on ground water source along with KMC water supply. Out of them only 8% used ground water for drinking purpose, 25% for agriculture and remaining for domestic activities such as bathing, washing etc.

The drinking and domestic water requirements ranged from 20-40 litres/day and 250-2000 litres/day respectively. Around 55% respondents stored water required for drinking and domestic purposes in metal vessels. cement or plastic tanks were used by 34% and 11% used other types of plastic containers for water storage for domestic activities.

In general at least drinking water required some treatment as it contained impurities. This might be responsible for the adverse health effects. Majority i.e.58% respondents from this area treat drinking water by simple methods such as filtration (34%), boiling (17%), use of candle filter (21%) and other equipment (11%). But it is important to note that as many as 42% did not treat water used for drinking.

According to 75% respondents ground water has some taste such as bitter (8%), sweet (8%), sour (17%), bitter and other taste such as muddy etc. (41%). Around 25% of them told that the water was tasteless. Most of them reported that the water supplied by KMC had powdery and chlorinated taste.

Approximately 83% respondents reported some adverse effects due to water consumption. However, a fraction (17%) did not observe any adverse effects.. The most sufferer age group was small children (42%), followed by old people (25%) and youth

(17%). These effects were observed mostly in rainy season (58%), summer (25%), both rainy and summer (9%) and in all seasons (8%).

Regarding the lather formation, 42% respondents observed satisfied amount of later soap is react with water but 58% observed there is difficulty in it. It indicates that more than half of the population faces the problem of water hardness. 50% represents observed adverse effect on hairs such as hair loss (83%), stickiness of hairs (17%) when water was used for washing the hairs. According to 75% represents there was some adverse effect on containers used for storage of water such as development of white spots (78%) and scale formation (22%).

For the agriculture 33% respondents used ground water (especially well water). There were different causes responsible for water pollution. Leakage and percolation of sewage and wastewater were the major sources of ground water contamination. In this area 67% respondents used ground water sources located near gutters and Nalhas, 25% in agricultural fields and 8% near houses which were in close proximity to septic tanks, toilets etc.

According to most respondents water sources though are perennial their quality and quantity was adversely affected in rainy and summer season. For the last 10 years, 58% and 83% respondents did not observed adverse change in water quality and quantity respectively. However, 42% represents did notice adverse change in water quality. Around 17% observed good change in water quantity such as increase in the number of sources.

Water quality got affected due to overuse of chemical fertilisers in the fields, dumping of organic waste, bathing and washing activities in the premises of water sources, lack of sanitation etc. Most respondents (83%) were aware of about the existing water pollution and remaining ware either unaware or ignored it. Proper sanitation, wise r use of water, people's participation and awareness, governmental facilities are some of

the measures suggested by the respondents for controlling the prevailing water pollution.

According to 50% respondents some efforts were made for improving and increasing the water sources at governmental level and the remaining 50% felt that adequate efforts were not taken either personally or at village and governmental level.

5.2.3 Nagadevwadi

From Nagadevwadi 15 respondents were interviewed. Among these 56% were female and 44% were male. Out of them 22% belonged to age group 15-30 years, 33% from 31-45 years, 33% from 46-60 years and 12% were above 61 years. Regarding the educational background, 11% were ill-literate, 22% were matriculate, 56% were graduate and 11% were post graduate.

Nagadevwadi had various sources of water such as KMC water supply, Grampanchayat water supply and ground water sources such as hand pumps, bore wells, open wells etc. Around 55% respondents used KMC, Grampanchayat and hand pumps as a source of drinking water. 34% from Corporation, Grampanchayat and bore wells and 11% were depending on only ground water sources. For other domestic activities such as bathing, washing etc. 56% represents used all water sources except open wells, 11% used only corporation water and remaining 33% were depends on Municipal Corporation, hand pumps and bore wells. Here for agriculture open wells are used.

All respondents reported that KMC water , hand pumps and bore well are the perennial sources of water but water level gets depleted in summer. 56% respondent used water from more than three sources, 11% from only one source, 11% from two sources, 22% from three sources. When question was asked regarding the water treatment 89% respondents told that water supplied from both KMC and Grampanchayat sources are treated and 11% told that it was not.

All the respondent depended on ground water sources till they have governmental water supply facility. Most of the respondent used ground water for drinking, bathing, washing and agricultural purpose. Drinking water requirement ranged from 15-30 lit/day and for other domestic purposes it was 300-1000 lit/day.

All the respondent used metal contains for storage of drinking water. For domestic purpose 55% population used Syntex tanks, 11% cement tanks, 11% barrels and 22% of them used metal and plastic containers. 78% respondents gave some treatment to drinking water such as filtration (11%), boiling (34%), boiling and candle filter (11%) and only use of candle filter (22%). Maximum respondents (89%) told that water had some taste such as sweet (87%), bitter and sour (13%) taste. But remaining 11% told that water was tasteless.

Sometimes the adverse effects were observed due to impure water. In Nagadevwadi 56% population did not observed any adverse effect but 44% of them noticed some health problems such as dysentery, acidity, sore throat (50%), kidney or urine stone (25%), vomiting and stomach-ache (25%). The affected individuals were small children (50%), youth, middle aged and old persons (50%). Among then 50% were male and 50% were female. Season is the factor related to health problems related to water. Significant respondents (57%) mentioned that most of the problems arise in rainy season and also both summer and rainy season of 43%.

When water is hard there is difficulty in lather formation with soap. 78% respondents told that lather was sufficiently formed and 22% found less lather formation. It was observed that there were adverse effects of bad quality water on hair and skin when it was used for bathing or washing.56% respondents observed effects on hair such as hair loss (80%), both hair loss and greying of hairs (20%). However, 11% ignored it and 33% had not observed any bad effects. 22% respondents noticed some skin problems such as dryness, itching and rash development whereas 78% had not when ground water was used for bathing.

It also showed scale formation, development of white spots and rarely it lead to hole formation on containers used for water storage. Though 44% respondents did not complain regarding these problems but over 55% had observed white spots on the storage equipment.

Location of ground water source was also responsible for contamination of water. Hence there is need to get detail information regarding location of water source. Around 78% respondents told that it was in the premises of house, that is may be near toilets, bathrooms, 11% near septic tanks and 11% near gutters.

According to 89% respondents there were some changes in water quality and quantity in last 10 years. Qualitatively 56% respondents told that quality was improved, considering tap water, and 44% told it was degraded. Quantitatively the sources had increased over years according to 78% respondents and 22% said they had not.

Most of the respondents told that seasonal variation, lack of awareness, misuse of water resource, ignorance of problems regarding storage, treatment, distribution and availability of water by people, government and policy makers. 78% of them were aware of the causes of water pollution. They suggested some measures for water quality and quantity problem mitigation such as proper drainage and percolation system, construction of gutters, personal hygiene, control and treatment to water and waste water etc. In Nagadevwadi where ever efforts are made in this direction they at personal level (25%), at Grampanchayat level (13%) and at government level (62%).

5.2.4 Tamgoan

In Tamgoan village 12 out of the total of 57 respondents were interviewed. Among these respondents 55% were men and 45% women. Regarding the age groups of the respondents 22% were from age group 15-30, 45% from age group 31-45 and remaining 33% from age group 46-60 and 61 years. Among them 22% were ill-literate, 33% were literate, 22% were matriculate, Same percentage of H.S.C. and graduate were observed that is 11%. No one of respondents was postgraduate.

In Tamgoan various sources of water used for different purposes are Grampanchayat water supply, percolation tank water, ground water sources such as hand pumps, bore wells and open wells. Recently Kagal water supply scheme was started in this village. Maximum residents used Grampanchayat, hand pumps and bore wells as a source of drinking water. Few of them used well and lake water for drinking due to proximity and during the scarcity of water. For the other domestic purposes, 45% respondents used hand pump and bore well water, very few of them i.e. 11% used water supplied by Grampanchayat for domestic purposes because of its inadequacy. Approximate 34% utilised water from all sources. For agriculture 89% respondents utilised well water and 11% percolation tank water.

Grampanchayat, percolation tank, bore wells and wells are mostly the perennial sources of water. But inadequate water was supplied by Grampanchayat and ground water table depleted in summer. 55% respondents used water only from two sources and 45% from more than two sources. Over 78% of the users told that water supplied by Grampanchayat was treated and 22% told it was not treated.

Approximate 66% used Groundwater for bathing, washing, agriculture and other purposes except drinking. Remaining 44% used it for all purposes. Daily requirement of water for drinking ranges from 15-40 lit/day and for other domestic purposes it was approximate 400-2000 lit/day. Out of them 77% required 15-25 lit/day and 33% used 30-40 lit/day. Approximate 67% respondents used metal utensils for drinking water storage and plastic containers, barrels, syntex or cement tanks for water stored for domestic purpose. Regarding taste of water, 22% respondents told that it was tasteless and 78 % told that it was having some taste such as sweet (22%), bitter and sour (78%) taste.

When we sought information regarding adverse health effects due to water used for drinking, 22% of them told that no any adverse effect was observed. But 78% suffered from some difficulties such as stomach-ache (43%), Dysentery (14%) and remaining 43% from some of them that is stomach-ache, Dysentery and vomiting. Non of them suffered from Jaundice or kidney stone. Female were found to be most suffers

that is approximate 66%. Maximum times 45% respondents all the family members were suffered. Small children and old persons were more susceptible (58%) than youth and middle age persons (42%). Season is the most important factor for diseases transformed by water. It showed that 56% respondents suffered in summer, 22% in rainy season and 22% in both rainy and summer seasons.

The lather formation of soap with the water is the simple criteria to know the hardness of water. 11% participants found that lather was easily formed, 11% found it is very difficult and 77% observed slight difficulty and less lather formation.

Sometimes ground water shows adverse effect on hair, skin and even on utensils. 44% represent ignore effects on hair and 56% noticed it such as hair loss (40%) greying of hairs (20%) and both 40%. When ground water was used for bathing 67% respondents not observed any adverse effect but 33% found skin problems such as etching and drying of skin and some skin infections. Ground water was stored in containers it showed scale formation (33%) , white spots (33%) and both (34%).

In case of agricultural utility of available water, 56% used groundwater for agriculture. Most of the ground water sources were located in farm (67%) and remaining (33%) were near house, drainage system, and gutters.

Most of the ground water supplies were perennial but a water level gets depleted in summer. According to 11% respondents there was no qualitative or quantitative change in available water. Over 88% respondents told that there was change in water quality. Out of them only 22% found it was of good quality water and 66% expressed adverse water quality. But all respondents agreed that numbers of water sources have increased.

Over 88% respondents were aware about the water pollution problem and only 12% were not aware of. Maximum participants (88%) told that efforts were made for improving and increasing water resources at personal level (12%), at village level (66%),

and at Government level (14%). The participants responded that precautionary measures must be immediately taken such as avoiding washing, bathing and waste disposal in the premises of water source to avoid water pollution.

Among these villages Morewadi (R.K.Nagar) and Kasaba bawada had KMC water supply . In Nagadevwadi there were both KMC and Grampanchayat water supply and in Tamgoan only Grampanchayat water supply. Recently Kagal water supply scheme was started in this village. In Morewadi and Kasaba Bawada most of the government hand pumps werere located on road sides and near gutters. In Nagadevwadi and Tamgoan hand pumps were rarely noticed and those installed were not in operation

In Nagadevwadi and Tamgoan most of the people depend on ground water sources and water scarcity was common in both villages. Most of the respondents reported that since last 10 years, in all the four villages, there is significant increase in the number of water sources such as taps, bore wells etc. despite, now they face a more serious problem of inadequate and unsafe drinking water.

In R. K. Nagar, many major leakages in water distribution pipelines were observed. During the primary survey it was observed that most of the hand pumps were located at roadsides, near gutters, bore wells near toilets and septic tanks and open wells in agricultural fields. Thus all sites were getting equal chance of water contamination. Majority of the respondents from all the study villages had to use treated drinking water by simple filtration method or they used candle filters.

It was observed that most of the health problems were associated with change in seasons, source of water, sanitation and hygienic conditions. As compared to winter, more health problems were noticed in rainy and summer seasons. In rainy season gastrointestinal health problems such as stomach-ache, dysentery, vomiting etc. were common. The affected individuals are mostly children's and old persons.

Also according to majority of the respondents adverse effects of hard water were observed on hair and skin. There was difficulty in lather formation with soap when such water was used for bathing and cloth washing. Development of white spots and scale formation on water storage utensils was very common.

Among the study villages Tamgoan was the most ill fated village. In summer there was severe water shortage problem when Gampanchayat water supply was very inadequate. Often there were large queues for water collection. Due to circumstances many of the respondents were forced to use contaminated ground water for domestic and even for drinking purpose. The health problems are severe in summer, due to scarcity of safe drinking water.
